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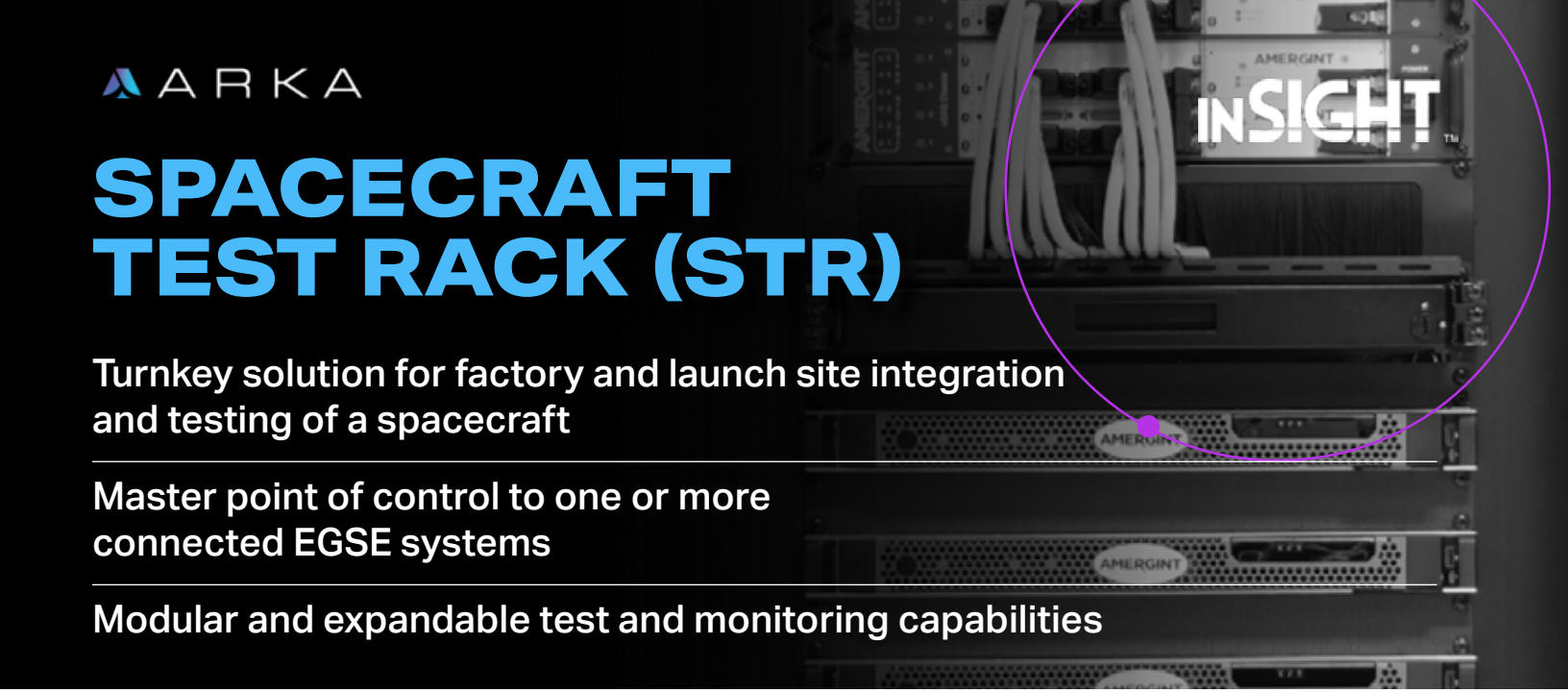
SPACECRAFT TEST RACK (STR)



Turnkey solution for factory and launch site integration and testing of a spacecraft

Master point of control to one or more connected EGSE systems

Modular and expandable test and monitoring capabilities

FEATURES AND CAPABILITIES

Serving as a master point of control to one or more connected test systems, the inSIGHT™ Spacecraft Test Rack (STR) provides a turnkey solution to support factory and launch site integrations and testing of a spacecraft.

MODULAR HARDWARE:

The STR's hardware design is modular and expandable, enabling provisioning of a variety of interfaces to key customer Electrical Ground Support Equipment (EGSE).

LOW-LATENCY DATA ACQUISITION AND CONTROL:

The STR employs our proven Ethernet-based low-latency Network Data Acquisition (nDAQ) Chassis for data acquisition and control of key spacecraft functions.

POWERED BY SOFTLINK®:

The STR uses SOFTLINK, our configurable software-defined architecture. SOFTLINK software applications (Apps) and services / microservices combine and order modular software devices (SwDs) to rapidly tailor and expand system capabilities with minimal risk and cost.

CUSTOMIZABLE USER INTERFACE:

The STR is shipped with a customizable, web-based User Interface (UI) for system control and status. Use the system UI to perform operations from any system that is networkconnected to the our applications.

TEST CAPABILITIES

The STR can connect directly to the spacecraft and/or key support equipment to provide full testing for:

- Power control management
- Emergency power management
- MIL-STD-1553 bus monitoring
- Spacecraft battery voltage and temperature monitoring
- Spacecraft discrete signals, such as breakwires
- Command and telemetry testing, customizable for non-standard interfaces
- Master control of other EGSE systems
- Remote console operations

The STR integrates with our Narrowband and Wideband Test Racks and other test and monitoring systems

Our extensive library of over 1500 software devices allows us to quickly add or modify common interface and test and monitoring functions via software.

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SAMPLE STR

The STR provides a central point of contact and remote console for one or more connected EGSE systems. Because the STR Rack is configurable, you can add exactly the test equipment you need. Below is a sample test rack.

I/O PANELS ARE CONNECTED USING THE MULTI FUNCTIONAL DIGITAL MODULE (MFDM-2) CARD

TYPICAL COMPONENTS

1. **EMERGENCY POWER OFF (EPO) PANEL:** Instantly disconnect electrical power to the rack.
2. **OSCILLOSCOPE:** Graphically monitor signals and voltages with automated remote capture ability.
3. **NDAQ CHASSIS:** Hosts software-configurable data acquisition modules and application software to control and monitor 1 to 1000s of I/O channels.
4. **KVM DRAWER:** Pullout monitor and keyboard for at-therack to access STC Apps and UIs, when needed
5. **STR SERVERS:** Host servers for rack applications (e.g., Power Control & Monitor App, Telemetry Processor App, customer-specific App, etc.).
6. **POWER SUPPLIES:** Programmable and high-performance DC power supplies.
7. **POWER DISTRIBUTION UNITS (PDUS):** High-quality, AC power distribution capabilities for reliable power management.
8. **CUSTOM EQUIPMENT:** Network/Ethernet switches, customer interface panels, crypto devices, GPS/timing servers, Digital Multimeters, etc.
9. **RS-422 AND TTL I/O PANELS:** High-density PCIe-based I/O to support telemetry and command processing. In additional to standard rack-mount I/O panels, custom panel solutions are available.

I/O PANEL EXAMPLES

STR INTEGRATION

The STR integrates seamlessly with one or more connected EGSE systems to provide a full spectrum of satellite test, missile test, and space/launch monitor and control solutions.

Our solutions can test network traffic, communication links, and more.

COMMUNICATION TEST SYSTEMS

Narrowband (NB) and **Wideband (WB) test racks** generate and receive Narrowband and Wideband RF waveforms to test communications.

CONTROL AND MONITORING RF SIGNALS

Our line of satTRAC Digitizers and satTRAC Waveform Applications receive and demodulate RF inputs and modulate and transmit RF outputs.

CONTROL AND MONITOR CHANNELS

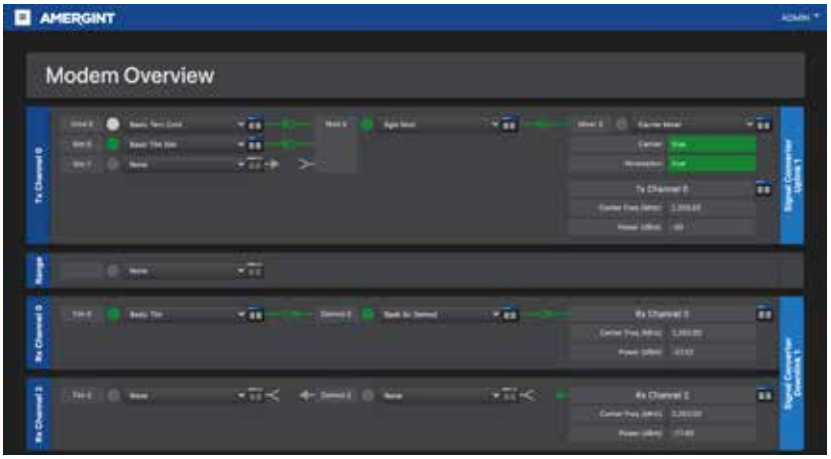
nDAQ Chassis hosts software-configurable data acquisition modules and application software that enable test and ground support equipment to control and monitor 1 to 1000s of I/O Channels. The software-configurable modules connect remote sensors, relays, actuators, and other discrete signals to a control computer via an Ethernet network.

CONTROL AND MONITOR DIGITAL AND RF COMPONENTS

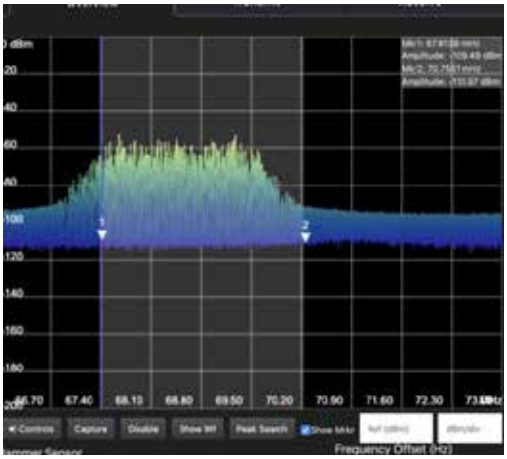
Our second generation Digital/RF Drawer is a configurable 2U network appliance drawer to monitor and control digital and RF components, including switches, attenuators, frequency synthesizers, amplifiers, and active mixers. The drawer features a standard back compartment to house the removable MicroZed+Controller (for Ethernet), Connector Interface Board, and Power Supplies. The front compartment is reserved for customer-specific components. Custom front and back panels are assembled for each configuration.

USER INTERFACE

The STR features an **intuitive** and **user-configurable** web-based User Interface (UI). Use the Overview window to **control and status** how data is flowing through the system and **drill down** into detailed parameters. The flow of data is visually represented using component blocks, arrows, and status indicators.



OVERVIEW WINDOW



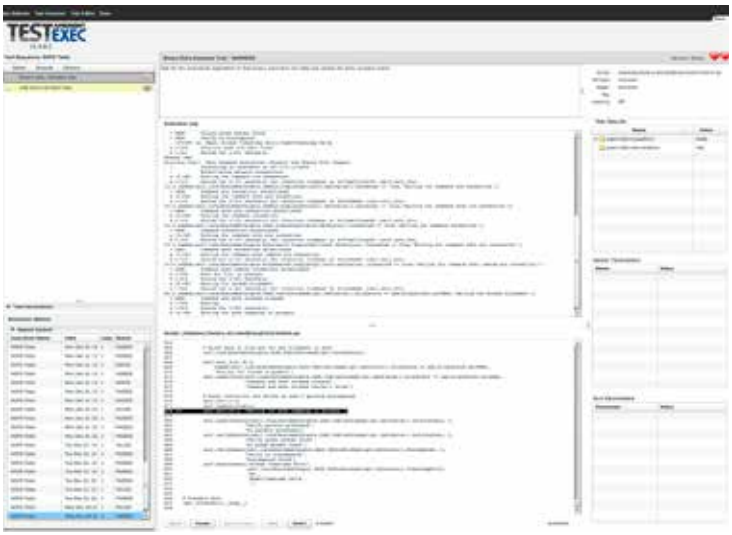
SPECTRUM ANALYZER

TestExec™ - AUTOMATED TESTING THAT SCALES

TestExec is a framework developed and used by ARKA to automate testing of our systems. TestExec includes Python Test Scripts and an intuitive user interface (UI) for remotely executing Test Scripts, collecting results, and generating reports.

Testing is flexible; you can orchestrate one Test Script, a few Test Scripts, or an ordered series of Test Scripts (called a Test Group).

As a Test Script executes, it writes the as-run test steps, verification steps, and verification data to an easy-tonavigate electronic Test Report. The pass/fail status of each requirement is recorded. The Test Report can also record the results of measurements, produce calculations, generate graphs, and include screen captures as part of the file. Test Reports are easily saved for archiving and accessing later.



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